IN THE CLAIMS

This is a complete and current listing of the claims, marked with status identifiers in parentheses. The following listing of claims will replace all prior versions and listings of claims in the application.

1. (Currently Amended) Method for selecting pulse lengths for measuring ~~the~~ at least one of a concentration and~~or~~ change in concentration of a redox-active substance as a mediator in a molecular-biological detection system, in which as a result of application of suitable potentials to a working electrode, at least one of a reduction process and ~~or~~ an oxidation process takes place as a redox reaction, ~~having the following measures~~the method comprising:

- pulsing the potential of the working electrode ~~is pulsed~~, and alternately forming measuring phases and ~~also~~ relaxation phases ~~are formed alternately~~;
- selecting, in this connection, the measuring-phase pulse lengths ~~are selected~~ so that, towards the end of the pulse, the capacitive current is relatively small in comparison with the Faraday current; and
- selecting the relaxation-phase pulse lengths ~~are selected~~ so that, towards the end of the pulse, the concentration gradient is relaxed so that at the beginning of ~~the~~ a following measuring phase, the change in concentration of the mediator, brought about by the consumption of the mediator by the measurement itself, is ~~reversed~~ reversible to the greatest possible extent.

2. (Currently Amended) Method according to claim 1, ~~characterised in that~~wherein ~~the~~ a current, ~~measured~~ measurable at the end of the measuring phase, forms the measuring signal.

3. (Currently Amended) Method according to claim 1, ~~characterised in that~~wherein, when measuring oxidation currents, an adequate reduction potential is set during the relaxation phase and the species oxidized during the measuring phase and still located in front of the electrode are reduced again (~~so-called~~ pulsed redox-cycling).

4. (Currently Amended) Method according to claim 1, ~~characterised in that~~wherein, when measuring reduction currents, an adequate oxidation potential is set during the relaxation phase and the species reduced during the measuring phase and still located in front of the electrode are oxidized again (~~so-called~~ pulsed redox-cycling).

5. (Currently Amended) Method according to claim 3~~ or claim 4~~, ~~characterised in that~~wherein the repetition rate for the pulsed redox-cycling amounts to at least 1/10 Hz.

6. (Currently Amended) Method according to ~~one of claims 2 to 5, characterised in that~~claim 3, wherein the pulsed redox-cycling is carried out with predeterminable pulse shapes~~, preferably with a rectangular, triangular or sinusoidal course~~.

7. (Currently Amended) Method according to ~~one of the preceding claims, characterised in that~~claim 1, wherein the relaxation phase is at least as long as the measuring phase.

8. (Currently Amended) Method according to claim 7, ~~characterised in that~~wherein the relaxation phase is considerably longer than the measuring phase.

9. (Currently Amended) Method according to claim 8, ~~characterised in that~~wherein, ~~with~~ a repetition rate of 1 Hz, the pulse lengths of the measuring phases amount to 100 to 300

ms, ~~preferably 250 ms,~~ and the relaxation phase amounts to between 700 and 900 ms~~, preferably 750 ms~~.

10. (Currently Amended) Method according to ~~one of the preceding claims, characterised in that~~claim 1, wherein the potentials are selected so that the reactions occur in the diffusion limiting current range.

11. (Currently Amended) Device for carrying out the measuring method according to ~~claim 1 or one of claims 2 to 10~~claim 1, ~~with~~ comprising:

a facility for producing potentials that ~~can be predetermined~~are determinable with respect to time and are variable electrically~~,~~ ; and

~~with~~ a transducer array ~~(100)~~.

12. (Currently Amended) Device ~~for [*sic*]~~ according to claim 11, ~~characterised in that~~wherein the transducer array ~~(100)~~ comprises~~consists of~~ at least one flexible planar metal substrate ~~(1)~~, arranged on which there is at least one flexible insulator ~~(2)~~ with a fixed connection between the metal surface and insulator surface, with the metal substrate being structured in such a way that metal regions ~~(10_i)~~ exist that are electrically insulated from each other, and with the insulator ~~(2)~~ that is located on the metal substrate ~~(1)~~ being structured in such a way that cavities ~~(3_i)~~ with open metal surfaces ~~(101_i *sic*)~~ are defined in the insulator ~~(2)~~, with the metal regions ~~(10_i)~~ being contactable from the side ~~(12_i)~~ that is remote from or lies opposite the sensor area ~~(11_i)~~.

13. (Currently Amended) Device according to claim 11, ~~characterised in that~~wherein the transducer array ~~(100)~~ comprises areal electrodes, whose smallest extent is relatively greater than typical diffusion lengths.

14. (Currently Amended) Device according to claim 13, ~~characterised in that~~wherein the areal electrodes have an extent of at least 30 µm~~, preferably 50 µm~~.

15. (Currently Amended) Device according to claim 14, ~~characterised in tha~~wherein ~~t~~ the areal electrodes are formed using thin-film technology on a non-conductive, rigid substrate.

16. (Currently Amended) Device according to claim 15, ~~characterised in that~~wherein the rigid substrate is silicon.

17. (Currently Amended) Device according to claim 16, ~~characterised in that~~wherein an insulator is provided on the substrate.

18. (Currently Amended) Device according to claim 11, ~~characterised in that~~wherein the facility for producing predeterminable electric potentials is a potentiostat ~~(5)~~.

19. (Currently Amended) Device according to claim 18, ~~characterised in that~~wherein associated with the potentiostat ~~(5)~~ for producing pulsed electric potentials there is a pulse generator ~~(6)~~.

20. (Currently Amended) Device according to claim 19, ~~characterised in that~~wherein operational amplifiers ~~(7, 7')~~ and a defined measuring resistor ~~(8)~~ are provided in the potentiostat ~~(5)~~.

21. (New) Method according to claim 3, wherein the repetition rate for the pulsed redox-cycling amounts to at least 1/10 Hz.

22. (New) Method according to claim 6, wherein the pulsed redox-cycling is carried out with at least one of a rectangular, triangular and sinusoidal course.

23. (New) Method according to claim 4, wherein the pulsed redox-cycling is carried out with predeterminable pulse shapes.

24. (New) Method according to claim 23, wherein the pulsed redox-cycling is carried out with at least one of a rectangular, triangular and sinusoidal course.

25. (New) Method according to claim 8, wherein, with a repetition rate of 1 Hz, the pulse lengths of the measuring phases amount to 250 ms, and the relaxation phase amounts to 750 ms.

26. (New) Device for selecting pulse lengths for measuring at least one of a concentration and change in concentration of a redox-active substance as a mediator in a molecular-biological detection system, in which as a result of application of suitable potentials to a working electrode, at least one of a reduction process and an oxidation process takes place as a redox reaction, the device comprising:

means for pulsing the potential of the working electrode, and alternately forming measuring phases and relaxation phases;

means for selecting, in this connection, the measuring-phase pulse lengths so that, towards the end of the pulse, the capacitive current is relatively small in comparison with the Faraday current; and

means for selecting the relaxation-phase pulse lengths so that, towards the end of the pulse, the concentration gradient is relaxed so that at the beginning of a following measuring phase, the change in concentration of the mediator, brought

about by the consumption of the mediator by the measurement itself, is reversible to the greatest possible extent.

27. (New) Device according to claim 26, further comprising:

means for measuring at least one of a concentration and change in concentration of a redox-active substance as a mediator, in a molecular-biological detection system, using the selected pulse lengths.

28. (New) Method according to claim 1, further comprising:

measuring at least one of a concentration and change in concentration of a redox-active substance as a mediator, in a molecular-biological detection system, using the selected pulse lengths.